INSTITUTE VISION AND MISSION

VISION

To be among the Top 20 Private Engineering Institutes in India by 2020

MISSION

- Design and implement curriculum that equips students with professional and life skills
- ▶ Recruit, develop and retain outstanding faculty to achieve academic excellence
- > Promote and undertake quality research in thrust areas of science and technology
- Collaborate with industry and academia to meet the changing needs of society
- > Foster innovation and cultivate the spirit of entrepreneurship among students

DEPARTMENT VISION AND MISSION

VISION

Be a leader in promoting Computer Science and Engineering Education.

MISSION

- Build Computer Science and Engineering Knowledge in students by implementing novel educational experiences.
- > Develop effective instructional infrastructure resources.
- Promote interdisciplinary learning
- Contribute to community development activities.

Program Educational Objectives (PEOs)

I. Ability to solve diverse and complex computer science and engineering problems across a broad range of domains

II. Pursue a career in the field of computer science and engineering.

III. Pursue higher education and/or professional development courses for life-long learning.

IV. Support community building activities to improve the quality of life.

Program Outcomes (POs) and Program Specific Outcomes (PSOs)

PO 1: *Engineering Knowledge*: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.

PO 2: *Problem Analysis*: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: *Design/Development of Solutions*: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations

PO 4: *Investigate Complex Problems*: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: *Modern Tool Usage*: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations

PO 6: *The Engineer and Society*: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: *Environment and Sustainability*: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: *Ethics:* Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: *Individual and Teamwork*: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: *Communication*: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions

PO 11: *Project Management and Finance*: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: *Life-Long Learning*: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcome (PSO) 1: Apply mathematical foundations, algorithmic principles, and theoretical computer science in the modeling and design of computer based systems in way that demonstrates comprehension of the tradeoffs involved in design choices.

Program Specific Outcome (PSO) 2: Apply design and development principles in the construction of software systems of varying complexity.



ACADEMIC REGULATIONS – RA18 FOR CBCS BASED REGULAR B.TECH. (UG) PROGRAM

(Effiective for the students admitted into First Year Regular B.Tech. from the Academic Year 2018-19 and onwards)

1.0 <u>Under-Graduate Degree Program in Engineering & Technology (UGP in E&T)</u>

SR Engineering College (SREC) - (Autonomous), Warangal affiliated to Jawaharlal Nehru Technological University Hyderabad (JNTUH) offers 4 Year (8 Semesters) **Bachelor of Technology (B.Tech.)** Degree Program, under Choice Based Credit System (CBCS), with effect from the Academic Year 2018 - 19 onwards, in the following Branches of Engineering:

Branch Code	Branch
01	Civil Engineering (CE)
02	Electrical and Electronics Engineering (EEE)
03	Mechanical Engineering (ME)
04	Electronics and Communication Engineering (ECE)
05	Computer Science and Engineering (CSE)

2.0 Eligibility for Admission

- 2.1 Admission to the UGP shall be made either on the basis of the merit rank obtained by the qualifying candidate at an Entrance Test conducted by the Telangana State Government (EAMCET), OR the University, OR on the basis of any other order of merit approved by the University, subject to reservations as prescribed by the Government from time to time.
- **2.2** The medium of instructions for the entire UGP in E&T will be **English** only.

3.0 B.Tech. Program (UGP) Structure

3.1 The B.Tech. Program of SREC are of Semester Pattern, with 8 Semesters constituting 4 Academic Years, each academic year having TWO regular semesters (First/Odd and Second/Even Semesters). Each regular semester shall be of 22 weeks duration (inclusive of examinations), with a minimum of 90 instructional days per semester.

A student, after securing admission, shall persue the UGP in B.Tech. in a minimum period of 4 academic years (8 semesters), and a maximum period of 8 academic years (16 semesters) starting from the date of commencement of first year first semester; failing which, student shall forfeit seat in B.Tech. program.

Each student shall register for and secure the specified number of credits (with CGPA \geq 5) required for the completion of the UGP and award of the B.Tech. degree in respective branch of engineering.

The B.Tech. Program is structured into eight semesters totalling to 160 credits.

3.2 UGC/ AICTE specified definitions / descriptions are adopted appropriately for various terms and abbreviations used in these Academic Regulations / Norms, which are as listed below.

3.2.1 Semester Scheme

Each UGP is of 4 academic years (8 semesters), with the year being divided into two regular semesters of 22 weeks (\geq 90 working days) each, each semester having - 'Continuous Internal Evaluation (CIE)' and 'Semester End Examination (SEE)'. Choice Based Credit System (CBCS) and Credit Based Semester System (CBSS) as denoted by UGC, and Curriculum / Course structure as suggested by AICTE are followed.

A 3-week long Induction Program is scheduled in the first year. The pupose of this Induction Program is to make the students comfortable in the new environment, open them up, set a healthy daily routine, create bonding in the batch as well as between faculty and students, develop awarness, sensitivity and understanding of the self, people around them, society at large, and nature. The time during the Induction Program is also used to rectify some critical lacunas, for example, English background, for those students who have deficiency in it. The Induction Program defined here amalgamates Foundation Program, Human Values Course and Counselling service or mentorship, all the three into an integrated whole, which leads to its high effectiveness in terms of building physical activity, creativity, bonding, and character. It develops sensitivity towards self and one's relationships, builds awareness about others and society beyond the individual, and also in bonding with their own batch-mates, senior students besides faculty members.

3.2.2 Credit Courses

All courses are to be registered by a student in a semester to earn credits. Credits which shall be assigned to each course in a L: T: P/D/M/PR: C (Lecture Periods: Tutorial Periods / Practical / Drawing Periods / MOOC: Project: Credits) structure, based on the following general pattern.

One Credit - for one hour / week / semester for Theory or Lecture (L) course and Tutorial (T).

One Credit - for two hours / week / semester for Laboratory or Practical (P) ; Drawing (D) courses and MOOC (M).

The courses such as Gender Sensitization, Environmental Sciences etc. are considered as Mandatory Courses and will not carry any credits.

3.2.3 Course Classification

All courses offered for the UGP in E&T (B.Tech Degree Programme) are broadly classified as follows:

S. No	Category	Course Description
1	HS	Humanities and Social Sciences including Management Courses
2	BS	Basic Science Courses
3	ES	Engineering Science Courses
4	PC	Professional Core Courses
5	PE	Professional Elective Courses
6	OE	Open Elective Courses
7	PW	Capstone, internship, certification, mini project etc. in industry or elsewhere
8	MC	Mandatory Courses
		Total

4.0 Course Registration

- **4.1** A 'Faculty Advisor or Counselor' shall be assigned to a group of students, who will advise about the UG Program, its course structure and curriculum, choice / option for courses, based on their competence, progress, pre-requisites and interest.
- **4.2** Academic section of the college invites 'registration forms' from students before the beginning of the semester through 'on-line registration'. The on-line registration requests for any 'current semester' shall be completed before the commencement of semester end examinations of the 'preceding semester'.
- **4.3** A student can apply for on-line registration, only after obtaining the 'written approval' from faculty advisor / counsellor, which should be submitted to the college academic section through the Head of the department. A copy of it shall be retained with Head of the department, faculty advisor/counsellor and the student.
- **4.4** A student may be permitted to register for courses of choice by opting for taking one 'additional course' per semester offered in the following semester/year, based on progress, Semester Grade Point Average (SGPA) / Cumulative Grade Point Average (CGPA) and completion of the pre-requisites as indicated for various courses. However the students can also drop one course per semester.
- **4.5** Dropping of one course may be permitted, ONLY AFTER obtaining prior approval from the faculty advisor, within a period of 15 days from the beginning of the current semester.
- **4.6** Choice for 'additional course' must be clearly indicated, which needs the specific approval and signature of the faculty advisor / counsellor and Head of the department.
- **4.7** If the student submits ambiguous choices or multiple options or erroneous entries-during **on-line** registration for the course(s) under a given / specified course group / category as listed in the course structure, only the first mentioned course in that category will be taken into consideration.
- **4.8** Course options exercised through ON-LINE registration are final and **cannot** be changed, and CANNOT be inter-changed; further, alternate choices will also not be considered. However, if the course that has already been listed for registration by the Head of Department in a semester could not be offered due to any unforeseen or unexpected reasons, then the student shall be allowed to have alternate choice either for a new course (subject to offering of such a course), or for another existing course (subject to availability of seats). Such alternate arrangements will be made by the Head of the department, with due notification and time-framed schedule, within the **first week** from the commencement of class-work for that semester.
- **4.9 Open Electives:** The students have to choose Open Electives from the list of Open Electives given. However, the student cannot opt for an Open Elective course offered by their own (parent) department, if it is already listed under any category of the courses offered by parent department in any semester.

The Open Electives are offered as tracks and also as individual courses. The student can opt for a track and continue in the same or opt for any Open Elective from the list, provided he fulfils the prerequisite.

- **4.10 Professional Electives:** The students have to choose Professional Electives from the list given. The Professional Electives are offered as tracks and also as individual courses. The student can opt for a track and continue in the same or opt for any Professional Elective from the list provided he fulfils the prerequisite.
- **4.11** Based on the industry / societal demand, additional relevant course(s) may be added under Professional Elective(s) and / or Open Elective(s).
- **4.12** A few courses can be registered as extra courses other than the 160 credits as specified in the course structure, which can be offered by the college / online / MOOC.

5.0 Courses to be offered

- **5.1** A typical section (or class) strength for each semester shall be 60.
- 5.2 A course may be offered to the students, only if a minimum of 20 students (1/3 of the section strength) opt for it. The maximum strength of a section is limited to 80 (60 + 1/3 of the section strength).
- **5.3** More than **one faculty member** may offer the SAME COURSE (Lab. / Practical's may be included with the corresponding theory course in the same semester) in any semester. However, selection choice for students will be based on **'first come first serve** basis and CGPA criterion' (i.e., the first focus shall be on early **on-line entry** from the student for registration in that semester, and the second focus, if needed, will be on CGPA of the student).
- **5.4** If more entries for registration of a course come into picture, then the Head of Department concerned shall decide whether to offer such a course for TWO (or multiple) sections or not.

6.0 Attendance Requirements

- 6.1 A student shall be eligible to appear for the semester end examinations, if student acquires a minimum of 75% of attendance in aggregate of all the courses (excluding mandatory non-credit courses) for that semester.
- **6.2** Shortage of attendance in aggregate up to 10% (65% and above, and below 75%) in each semester may be condoned by the College Academic Committee on genuine and valid grounds, based on the student's representation with supporting evidence.
- 6.3 A stipulated fee shall be payable towards condoning of shortage of attendance.
- 6.4 Shortage of attendance below 65% in aggregate shall in NO case be condoned.
- 6.5 Students, whose shortage of attendance is not condoned in any semester, are not eligible to take their end examinations of that semester. They get detained and their registration for that semester shall stand cancelled. They will not be promoted to the next semester. They may seek re-registration for all those courses registered in that semester in which student was detained by seeking re-admission into that semester as and when offered; in case if there are any Professional Electives and/ or Open Electives, the same may also be re-registered if offered. However, if those electives are not offered in later semesters, then alternate electives may be chosen from the SAME set of elective courses offered under that category.
- 6.6 A student fulfilling the attendance requirement in the present semester shall not be eligible for re-admission into the same class.

7.0 Academic Requirements

The following Academic Requirements have to be satisfied, in addition to the Attendance Requirements mentioned in Item No.6.

- 7.1 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each course, if student secures not less than 35% marks (25 out of 70 marks) in the Semester End Examination, and a minimum of 40% of marks in the sum total of the Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) taken together; in terms of letter grades, this implies securing 'C' grade or above in that course.
- 7.2 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to Certification Course / Mini Project / Internship; Capstone Phase I; Capstone Phase II / Practice School, if student secures not less than 40% of the marks in each of them.

The student is deemed to have failed, if he (i) does not submit a report on Certification Course/ Mini Project/ Internship/ Capstone/ Practice School, or does not make a presentation of the same before the evaluation committee as per schedule, or (ii) does not present the seminar as required, or (iii) secures less than 40% marks in Certification Course/ Mini Project/ Internship/ Capstone/ Practice School evaluations.

A student may reappear once for each of the above evaluations, when they are scheduled again; if the student fails in such 'one reappearance' evaluation also, the student has to reappear for the same in the next subsequent semester, as and when it is scheduled.

S. No.	Promotion	Conditions to be fulfilled				
1	I year I semester to I year II semester	Regular course of study of I year I semester				
2	I year II semester to II year I semester	 i) Regular course of study of I year II semester ii) Must have secured at least 50% credits up to I year II semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not. 				
3	II year I semester to II year II semester	Regular course of study of II year I semester				
4	II year II semester to III year I semester	 i) Regular course of study of II year II semester ii) Must have secured at least 60% credits up to II year II semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not. 				
5	III year I semester to III year II semester	Regular course of study of III year I semester				
6	III year II semester to IV year I semester	 i) Regular course of study of III year II semester ii) Must have secured at least 60% credits up to III year II semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not. 				
7	IV year I semester to IV year II semester	Regular course of study of IV year I semester.				

7.3 Promotion Rules

7.4 A student (i) shall register for all courses covering 160 credits as specified and listed in the course structure, (ii) fulfills all the attendance and academic requirements for 160 credits, (iii) earn all 160 credits by securing SGPA \geq 5.0 (in each semester), and CGPA (at the end of each successive semester) \geq 5.0, (iv) passes all the mandatory courses, to successfully complete the under graduate programme.

The performance of the student in these 160 credits shall be taken into account for the calculation of 'the final CGPA (at the end of under graduate programme), and shall be indicated in the grade card of eighth semester (IV year II semester).

- **7.5** If a student registers for 'extra courses' (in the parent department / other departments of engg. / through MOOCS) other than those listed courses totalling to 160 credits as specified in the course structure of the respective department, the performances in those 'extra courses' (although evaluated and graded using the same procedure as that of the required 160 credits) will not be taken into account while calculating the SGPA and CGPA. For such 'extra courses' registered, Letter Grade alone will be indicated in the Grade Card, as a performance measure, subject to completion of the attendance and academic requirements as stated in regulations 6 and 7.1–7.4 above
- **7.6** A student eligible to appear in the SEE in any course, but absent from it or failed (thereby failing to secure C grade or above), may reappear for that course in the supplementary examination as and when conducted. In such cases, CIE assessed earlier for that course will be carried over, and added to the marks to be obtained in the SEE supplementary examination, for evaluating performance in that course. However, an improvement examination may be conducted for the students who have secured less than 50% of marks in the respective CIE.
- 7.7 A student detained in a semester due to shortage of attendance, may be re-admitted when the same semester is offered in the next academic year for fulfillment of academic requirements. The academic regulations under which student has been readmitted shall be applicable. However, no grade allotments of SGPA / CGPA calculations will be done for the entire semester in which student has been detained.
- **7.8** A student detained due to lack of credits, shall be promoted to the next academic year only after acquiring the required academic credits. The academic regulations under which student has been readmitted shall be applicable to him.

8.0 Evaluation - Distribution and Weightage of Marks

- 8.1 The performance of a student in each semester shall be evaluated course-wise (irrespective of credits assigned) with a maximum of 100 marks for Theory or Practical or Drawing / Design or Certification Course / Mini Project / Internship; Capstone Phase I; Capstone Phase II / Practice School.
- **8.2** For all courses, the distribution shall be 30 marks for Continuous Internal Evaluation (CIE), and 70 marks for the Semester End Examination (SEE). However, there shall be equal weightage for both CIE and SEE in case of activity based courses.
- **8.2.1** The CIE for the courses may be carried out by the way of various components such as internal examinations, assignments and quizzes. The weight and syllabus for each

component of CIE for a course shall be notified by the concerned teacher before the commencement of each semester through the lesson plan adhering to the norms stipulated from time to time. The concerned teacher in association with the Head of the Department shall be responsible for the conduct of different components of CIE. The marks obtained by a student in each component of CIE shall be added and finalized for the total marks by the concerned teacher. The first internal marks and first course activity marks shall make one set of CIE marks and the second internal marks and second course activity marks shall make second set of CIE marks. 75% of marks shall be taken from the better of these two sets and 25% from the other set as the final marks secured by the student towards CIE in that course.

- **8.2.2** The first internal examination shall be conducted for the first 50% of the syllabus (i.e. after the completion of three units), and the second internal examination shall be conducted for the remaining 50% of the syllabus (i.e. after the completion of six units).
- **8.2.3** The Controller of Examinations shall make arrangements to conduct SEE for all the courses and notify the evaluation procedure to be adopted for the evaluation of various courses from time to time.
- **8.2.4** For activity courses such as Design, Cognitive Science, Social Innovation, Visual Communication & Computer Art, Entrepreneurship and selected courses in Open and Professional Electives, the Semester End Examination shall be conducted by concerned teacher and a senior faculty appointed by the Controller of Examinations / Principal.
- **8.2.5** The Advanced Supplementary examinations facility shall be made available to students who are unable to satisfy the academic requirements for promotion to the next semester due to shortage of credits. The conduct of such exams shall be informed by the Controller of Examinations / Principal.
- **8.3** For Practical Courses/ Drawing, there shall be a Continuous Internal Evaluation (CIE) during the semester for 30 internal marks and 70 marks are assigned for Semester End Examination (SEE). Out of the 30 marks for internals, day-to-day work shall be evaluated for 20 marks by the way of experiments, demonstrations, field work, models, work sheets, practical record books, quizzes, tests etc. and the remaining 10 marks for two internal tests, conducted by the concerned faculty and the better of these two tests is taken into account. The SEE for these courses shall be conducted at the end of the semester by two examiners appointed by the Head of the Department/Controller of Examinations.
- **8.4** The Certification Course/ Mini Project/ Internship, shall be submitted in a report form, and a presentation of the same shall be made before a committee, and should be evaluated for 100 marks. The committee shall consist of the Head of the Department, supervisor and a senior faculty member of the department. For the Certification Course, the student shall acquire the certification from a source approved by the respective department. There shall be no SEE for these courses.
- 8.5 The Capstone shall be carried out in two stages: Capstone I during IV Year I Semester, Capstone II during IV Year II Semester. Each stage will be evaluated for 100 marks. Student has to submit project work report at the end of each semester. First report includes project work carried out in IV Year I semester and second report includes

project work carried out in IV Year I & II Semesters. SEE for both project stages shall be completed before the commencement of SEE Theory examinations.

Out of the 50 marks allocated for CIE, 25 marks shall be awarded by the Project Supervisor (based on the continuous evaluation of students' performance throughout the project work period), and the other 25 marks shall be awarded by a departmental committee consisting of Head of the Department and Project Supervisor, based on the work carried out and presentation made by the student. The 50 marks for SEE will be evaluated by a committee comprising of an External Examiner in the relevant branch (appointed by Controller of Examinations / Principal), Head of the Department and Project Supervisor.

The student is deemed to have failed, if he (i) does not submit a report on Capstone or does not make a presentation of the same before the evaluation committee as per schedule, or (ii) secures less than 40% marks in the sum total of the CIE and SEE taken together.

A student who has failed may reappear once for the above evaluation, when it is scheduled again; if he fails in such 'one reappearance' evaluation also, he has to reappear for the same in the next subsequent semester, as and when it is scheduled.

- **8.6** Practice School shall be of twelve to sixteen weeks duration and is operated in the eighth semester. This is done principally to make available a continuous stream of well-prepared students to work on developmental projects in industry. The industry shall provide a certificate of completion and the student shall also submit a report of his project work to a a committee comprising of an External Examiner in the relevant branch (appointed by Controller of Examinations / Principal), Head of the Department and Project Supervisor.
- 8.7 For any of the Mandatory Course offered in a semester to the student, he/she shall be declared as 'satisfactorily completed' by the concerned authorities; based on (i) securing ≥ 65% of attendance and (ii) submission of a report/ presentation/ assignment in such a course. No marks or letter grade shall be allotted for these courses.

9.0 Grading Procedure

- **9.1** Grades will be awarded to indicate the performance of student in each theory course, Laboratory/ Practicals/ Drawing/ Certification course/ Mini Project/ Internship/ Capstone/ Practice School. Based on the % marks obtained in CIE + SEE (Continuous Internal Evaluation + Semester End Examination, both taken together) as specified in Item 8 above, and a corresponding Letter Grade shall be given.
- **9.2** As a measure of the student's performance, a 10-point absolute grading system using the following letter grades (as per UGC / AICTE guidelines) and corresponding percentage of marks shall be followed.

% of Marks Secured (Class Intervals)	Letter Grade (UGC Guidelines)	Grade Points
Greater than or equal to 90%	O (Outstanding)	10
80 and less than 90%	A ⁺ (Excellent)	9
70 and less than 80%	A (Very Good)	8
60 and less than 70%	B ⁺ (Good)	7
50 and less than 60%	B (Average)	6
40 and less than 50%	C (Pass)	5
Below 40%	F (FAIL)	0
Absent	Ab	0

- **9.3** A student obtaining an **'F'** grade in any course shall be deemed to have **'failed'** and it is required to reappear as 'supplementary candidate' in the Semester End Examination (SEE), as and when offered. In such cases, Continuous Internal Evaluation (CIE) marks in those course(s) will remain same as those obtained earlier.
- **9.4** A student who has not appeared for examination in any course, '**Ab**' grade will be allocated in that course, and he is deemed to have '**failed**'. A student will be required to reappear as a 'supplementary candidate' in the Semester End Examination, as and when offered next. In this case also, Continuous Internal Evaluation (CIE) marks in those course(s) will remain same as those obtained earlier.
- **9.5** A Letter Grade does not indicate any specific % of marks secured by the student, but it indicates only the 'range of % of marks'.
- **9.6** In general a student shall not be permitted to repeat any subject/course(s) only for the sake of 'Grade Improvement 'or 'SGPA/CGPA Improvement'. However, he has to repeat all the courses pertaining to that Semester, when he is detained (as listed in Items 7.7)
- **9.7** A student earns Grade Point (GP) in each course, on the basis of the letter grade secured in that course. The corresponding 'Credit Points' (CP) are computed by multiplying the Grade Point with Credits for that particular course.

Credit Points (CP) = Grade Point (GP) x Credits for a course

- **9.8** The student passes the course only when he gets $GP \ge 5$ (C grade or above).
- **9.9** The Semester Grade Point Average (SGPA) is calculated by dividing the sum of credit points (Σ CP) secured from ALL courses registered in a semester, by the total number of credits registered during that semester. SGPA is rounded off to TWO decimal places. SGPA is thus computed as

SGPA = $i^{N} {}_{1} C_{i} G_{i} / i^{N} {}_{1} C_{i}$ for each semester,

Where, 'i' is the course indicator index (takes into account all courses in a semester), 'N' is the number of courses 'REGISTERED' for the semester (as specifically required and

listed under the course structure of the parent department), C_i is the no. of credits allotted to the i^{th} course, and G_i represents the grade point corresponding to the letter grade awarded for that i^{th} course.

9.10 The Cumulative Grade Point Average (CGPA) is a measure of the overall cumulative performance of a student in all semesters considered for registration. The CGPA is the ratio of the total credit points secured by a student in **all** registered courses in all semesters, and the total number of credits registered in **all** the semesters. CGPA is rounded off to **two** decimal places. CGPA is thus computed from the I year second semester onwards, at the end of each semester, as per the formula

end of each semester, as per the formula $\frac{M}{M} = C_j G_j / \frac{C_j}{j_1}$ for all S semesters registered

(i.e., upto and inclusive of S semesters, S 2), Where, 'M' is the TOTAL number of courses (as specifically required and listed under the course structure of the parent department) the student has '**Registered'** i.e. from the first semester onwards upto and inclusive of the eigth semester, 'j' is the course indicator index (takes into account all courses from 1 to 8 semesters), C_j is the number of credits allotted to the jth course, and G_j represents the grade points (GP) corresponding to the letter grade awarded for the jth course. After registration and completion of first year first semester, the SGPA of that semester itself may be taken as the CGPA, as there are no cumulative effects.

Course	Credits	Letter Grade	Grade Points	Credit Points
Course 1	4	А	8	4 x 8 = 32
Course 2	4	0	10	4 x 10 = 40
Course 3	4	С	5	$4 \ge 5 = 20$
Course 4	3	В	6	$3 \times 6 = 18$
Course 5	3	A+	9	$3 \times 9 = 27$
Course 6	3	C	5	$3 \times 5 = 15$
	21			152

Illustration of calculation of SGPA

SGPA = 152 / 21 = 7.24

Illustration of calculation of CGPA upto 3rd semester

Course	Credits	Letter Grade	Grade Points	Credit Points
	Ι	Year I Semester		
Course 1	3	А	8	24
Course 2	3	0	10	30
Course 3	3	В	6	18
Course 4	4	А	8	32
Course 5	3	A+	9	27
Course 6	4	С	5	20
Course 7	4	В	6	24
Course 8	4	А	8	32
Course 9	3	С	5	15

Course 10	3	0	10	30
Course 11	3	B+	7	21
Course 12	4	В	6	24
Course 13	4	А	8	32
Course 14	3	0	10	30
Course 15	2	А	8	16
Course 16	1	С	5	5
Course 17	4	0	10	40
Course 18	3	B+	7	21
Course 19	4	В	6	24
Course 20	4	А	8	32
Course 21	3	B+	7	21
Total Credits & Points	69			518

CGPA = 518/69 = 7.51

The above illustrated calculation process of CGPA will be followed for each subsequent semester until 8th semester. The CGPA obtained at the end of 8th semester will become the final CGPA secured for entire B.Tech. Programme.

- **9.11** For merit ranking or comparison purposes or any other listing, **only** the **'rounded off'** values of the CGPAs will be used.
- **9.12** For calculations listed in regulations 9.7 to 9.10, performance in failed subjects/ courses (securing F grade) will also be taken into account, and the credits of such subjects/ courses will also be included in the multiplications and summations. After passing the failed subject(s) newly secured letter grades will be taken into account for calculation of SGPA and CGPA. However, mandatory courses will not be taken into consideration.

SGPA and CGPA of a semester will be mentioned in the semester Memorandum of Grades if all subjects of that semester are passed in first attempt. Otherwise the SGPA and CGPA shall be mentioned only on the Memorandum of Grades in which sitting he passed his last exam in that semester. However, mandatory courses will not be taken into consideration.

10.0 Passing Standards and Improvement

10.1 In spite of securing C grade or above in some (or all) courses in any semester, if a student receives a SGPA < 5.00 and / or CGPA < 5.00 at the end of such a semester, then student 'may be allowed' (on the 'specific recommendations' of the Head of the Department and subsequent approval from the Principal) – subject to satisfying the credit requirements minimum as maintained in item 7.3</p>

(i) to go into the next subsequent semester (subject to fulfilling all other attendance and academic requirements as listed under Items 7 & 8).

(ii) to 'improve SGPA of such a semester (and hence CGPA) to 5.00 or above', by reappearing for ONE or MORE (as per student's choice) of the same course(s) in which student has secured C grade(s) in that semester, at the supplementary examinations to be

held in the next subsequent semester(s). In such cases, internal marks (CIE marks) in those course(s) will remain same as those he obtained earlier.

In these considerations, the newly secured letter grades will be recorded and taken into account for calculation of SGPA and CGPA, 'only if there is an improvement'.

- 10.2 A student shall be declared 'successful' or 'passed' in a semester, if student secures a GP ≥ 5 ('C'grade or above) in every course in that semester; only, when student gets a SGPA ≥ 5.00 at the end of that particular semester. A student shall be declared 'successful' or 'passed' in the entire UGP, only when gets a CGPA ≥ 5.00 for the award of Degree, as required.
- **10.3** After the completion of each semester, a Grade Card or Grade Sheet (or Transcript) shall be issued to all the registered students of that semester, indicating the letter grades and credits earned. It will show the details of the Courses Registered (Course Code, Title, etc.), Credits earned, Grade earned, SGPA, and CGPA. In case of non-credit courses, 'Satisfactory (S)' or 'Not Satisfactory (NS)' is indicated seperately against that course on the Grade Card / Sheet.
- **10.4** A student shall be declared 'successful' or 'passed', if the student declared as 'satisfactorily completed' by the concerned authorities, in non-credit Audit / Mandatory Courses.

11.0 Declaration of Results

- **11.1** Computation of SGPA and CGPA are done using the procedure listed in 9.7 9.10.
- **11.2** For final percentage of marks equivalent to the computed final CGPA, the following formula may be used.

% of marks = (final CGPA - 0.5) x 10

12.0 Award of Degree

- 12.1 A student who registers for all the specified courses as listed in the course structure and secures the required number of 160 credits (with CGPA \geq 5.00), within 8 academic years from the date of commencement of the first academic year, shall be declared to have 'qualified' for the award of the B.Tech. Degree in the chosen Branch of Engineering as selected at the time of admission.
- **12.2** A student who qualifies for the award of the degree as listed in Item 12.1 shall be placed in the following classes:
- **12.2.1** Students with final CGPA (at the end of the UG Program) ≥ 8.00, shall be placed in 'FIRST CLASS with DISTINCTION'.
- **12.2.2** Students with final CGPA (at the end of the UG Programme) ≥ 6.50 but < 8.00, shall be placed in 'FIRST CLASS'.
- **12.2.3** Students with final CGPA (at the end of the UGP) \geq 5.50 but < 6.50, shall be placed in 'SECOND CLASS'.

- **12.2.4** All other students who qualify for the award of the degree (as per Item 12.1), with final CGPA (at the end of the UGP) \geq 5.00 but < 5.50, shall be placed in 'PASS CLASS'.
- **12.2.5** A student with final CGPA (at the end of the UGP) < 5.00 will not be eligible for the award of the degree.
- 12.3 Students who have passed all the courses in 'first appearance' within the first 4 academic years (or 8 sequential semesters) from the date of commencement of first year first semester with final CGPA \geq 8.00 in respective branch and should not have been detained or prevented from writing the semester end examinations in any semester due to shortage of attendance or any other reason, and those who are First Five Rankers in the respective branch are eligible for the award of 'Rank Certificate' in that year. The 'Branch Topper' will be awarded with 'Gold Medal'.

13.0 Withholding of Results

13.1 If the student has not paid fees to College / University at any stage, or has pending dues against his name due to any reason whatsoever, or if any case of indiscipline is pending against him, the result of the student may be withheld, and he will not be allowed to go into the next higher semester. The award or issue of the degree may also be withheld in such cases.

14.0 Transitory Regulations

14.1 Student who has discontinued for any reason, or has been detained for want of attendance or lack of required credits as specified, or who has failed after having undergone the degree program, may be considered eligible for readmission to the same courses (or equivalent courses, as the case may be), and same Professional Electives / Open Electives (or from set / category of electives or equivalents suggested, as the case maybe) as and when they are offered (within the time-frame of 8 years from the date of commencement of his I year I semester).

15.0 Student Transfers

- **15.1** There shall be no branch transfers after the completion of admission process.
- **15.2** The students seeking transfer to SREC from various other universities / institutions, have to pass the failed courses which are equivalent to the courses of SREC, and also pass the courses of SREC which the students have not studied at the earlier instutition. Further, though the students have passed some of the courses at the earlier institutions, if the same courses are priscribed in different semesters of SREC, the students have to study those courses in SREC inspite of the fact that those courses are repeated.
- **15.3** One chance is provided to write the internal examinations in the failed courses and / or courses not studied, to the students transferred from other universities / institutions to SREC who are on rolls, as per the clearance (equivalence) letter issued by the university.

16.0 Scope

16.1 The Academic Regulations should be read as a whole, for the purpose of any interpretation.

- **16.2** In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Principal is final.
- **16.3** The College may change or amend the Academic Regulations, Course Structure or Syllabi at any time, and the changes or amendments made shall be applicable to all students with effect from the dates notified by the college authorities.
- Note: Where the words "he", "him", "his", occur in the write-up of regulations, they include "she", "her", "hers".

Where the words "course" or "courses", occur in these regulations, they also imply "subject" or "subjects".

ACADEMIC REGULATIONS FOR B.TECH. (LATERAL ENTRY SCHEME - LES) (w.e.f. Academic Year 2018-19)

1. Eligibility for Award of B. Tech. Degree (LES)

The LES students after securing admission shall pursue a course of study for not less than three academic years and not more than six academic years.

- 2. The student shall register for 121 credits and secure 121 credits with CGPA \geq 5 from II year to IV year B.Tech. Program (LES) for the award of B.Tech. degree.
- 3. The students, who fail to fulfill the requirement for the award of the degree in six academic years from the year of admission, shall forfeit their seat in B.Tech.
- 4. The attendance requirements of B. Tech. (Regular) shall be applicable to B.Tech. (LES).

S. No.	Promotion	Conditions to be fulfilled			
1	Second year first semester to	Regular course of study of second year first			
1	Second year second semester	semester.			
2	Second year second semester to Third year first semester	 (i) Regular course of study of second year second semester. (ii) Must have secured at 60% credits up to second year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not. 			
3	Third year first semester to Third year second semester	Regular course of study of third year first semester.			
4	Third year second semester to Fourth year first semester	 (i) Regular course of study of third year second semester. (ii) Must have secured at least 60% credits up to third year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not. 			
5	Fourth year first semester to Fourth year second semester	Regular course of study of fourth year first semester.			

5. Promotion rule

6. All the other regulations as applicable to B.Tech. 4-year degree course (Regular) will hold good for B. Tech. (Lateral Entry Scheme).

<u>MALPRACTICES RULES</u> <u>DISCIPLINARY ACTION FOR IMPROPER CONDUCT IN EXAMINATIONS</u>

S No	Nature of Malpractices / Improper	Bunichmont
5.110.	conduct	Funisiment
	If the candidate / student:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the course of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the course of the examination)	Expulsion from the examination hall and cancellation of the performance in that course only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that course only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the course of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that course and all other courses the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the courses of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the courses of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining courses of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.

4.	Smuggles the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that course and all the other courses the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the courses of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
	Uses objectionable, abusive or offensive	
5.	language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that course.
6.	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer- in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that course and all other courses the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the courses of that semester/year. The candidates are also debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that course and all the other coures the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the course of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.

		Expulsion from the examination hall and cancellation of the performance in that course
8.	Possess any lethal weapon or firearm in the examination hall.	and all other courses the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the courses of that semester/year. The candidate is also debarred and forfeits the seat
		If the student belongs to the college, expulsion from the examination hall and cancellation of the performance in that course and all other
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	courses the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the courses of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that course and all other courses the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the courses of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that course and all other courses the candidate has appeared including practical examinations and project work of that semester/year.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

- 1. Punishments to the candidates as per the above guidelines.
- 2. Punishment for institutions: (if the squad reports that the college is also involved in encouraging malpractices)
 - (i) A show cause notice shall be issued to the college.
 - (ii) Impose a suitable fine on the college.
 - (iii) Shifting the examination centre from the college to another college for a specific period of not less than one year

* ****

S R ENGINEERING COLLEGE (Autonomous) (RA18) COURSE STRUCTURE:: B. TECH. COMPUTER SCIENCE AND ENGINEERING (Applicable from the batch admitted during 2018-19 academic year and onwards)

L: Theory, T: Tutorial, P/D: Practical/Drawing, C: Credits, CIE: Continuous Internal Evaluation, SEE: Semester End Examination

S.	Course	Course		Hours/Week			
No.	Code			Т	P/D	С	
1	18HS101	English I	2	-	-	2	
2	18HS103	Finance for Engineers	3	-	-	3	
3	18BS101	Mathematics I	3	1	-	4	
4	18BS103	Engineering Physics I	3	-	-	3	
5	18BS105	Engineering Chemistry	3	1	-	4	
6	18BS107	Engineering Chemistry Lab	-	-	2	1	
7	18ES104	Introduction to Programming Lab	-	-	3	1.5	
Total 18						18.5	

I Year I Semester

I Year II Semester

S. No.	Course Code	Course	Hours/Week				
			L	Т	P/D	С	
1	18HS102	English II	2	-	-	2	
2	18BS102	Mathematics II	3	1	-	4	
3	18BS104	Engineering Physics II	3	1	-	4	
4	18ES101	Product Design Studio	2	-	2	3	
5	18ES103	Problem Solving with Programming	2	-	-	2	
6	18HS104	English Language Communication Skills Lab	-	-	3	1.5	
7	18BS106	Engineering Physics Lab	-	-	2	1	
8	18ES105	Graphics and Design Modelling Lab	-	-	3	1.5	
9	18ES106	Problem Solving with Programming Lab	-	-	3	1.5	
Total						20.5	

II Year I Semester

S. No.	Course	Course	Hours/Week				
	Code	Course	L	Т	P/ D	С	
1	18ES102	Smart System Design	3	-	-	3	
2	18ES110	Data Structures	3	-	-	3	
3	18CS101	Discrete Mathematical Structures	3	-	-	3	
4	18CS102	Computer Organization and Architecture	3	1	-	4	
5	18CS103	Operating Systems	3	1	-	4	
6	18ES114	Data Structures Lab	-	-	2	1	
7	18CS106	Operating Systems Lab	-	-	3	1.5	
8	18MC102	Environmental Studies	-	-	-	-	
Total					19.5		

II Year II Semester

C No	Course Code Course	Course		Hours/Week			
5. NO.		Course	L	Т	P/ D	С	
1	18BS112	Probability and Statistics	3	-	-	3	
2	18ES111	Microprocessors and Embedded Systems	3	-	-	3	
3	18ES112	Object Oriented Programming Concepts through Java	3	-	-	3	
4	180E	Open Elective I	3	-	-	3	
5	18CS104	Theory of Computation	3	1	-	4	
6	18CS105	Database Management Systems	3	1	-	4	
7	18ES115	Object Oriented Programming Concepts through Java Lab	-	-	2	1	
8	18CS107	Database Management Systems Lab	-		3	1.5	
9	18MC101	Gender Sensitization	-	-	-	-	
Total						22.5	

III Year I Semester

C No	Course	rse Course -	Hours/We k			e
5. NO.	Code		L	Т	P/ D	С
1	180E	Open Elective II	3	-	-	3
2	18CS108 18CS109 18EC111 18CS110	Professional Elective I Artificial Intelligence Distributed Systems Foundations of IoT Principles of Programming Languages	3	-	-	3
3	18CS111	Design and Analysis of Algorithms	3	-	-	3
4	18CS112	Computer Networks	3	-	-	3
5	18CS113	Web Technologies	3	-	-	3
6	18CS120	Design and Analysis of Algorithms Lab	-	-	3	1.5
7	18CS121	Web Technologies Lab	-	-	3	1.5
8	18CS122	Computer Networks Lab	-	-	2	1
Total						19

III Year II Semester

S. No.	Course	Course		Hou k	rs/We	е
	Code	Course	L	Т	P/ D	С
1	180E	Open Elective III	3	-	-	3
2	18CS114 18CS115 18EC119 18CS116	Professional Elective II Neural Networks and Deep Learning Data Mining Distributed IoT Systems Scripting Languages	3	-	-	3
3	18CS117	Cryptography and Network Security	3	-	-	3
4	18CS118	Software Engineering	3	1	-	4
5	18CS119	Compiler Design	3	1	-	4
6 7 8	18CS123 18CS124 18PR101	Software Engineering Lab Compiler Design Lab Mini Project/Internship/Certification	- -	- -	3 3 4	1.5 1.5 2
Total						22

IV Year I Semester

C No	Course	Course	Hours/Wee k				
5. NO.	Code		L	Т	P/ D	С	
		Professional Elective III					
	18CS129	Big Data Analytics					
1	18CS128	Natural Language Processing	3	-	-	3	
	18EC126	Security in IoT					
	1805130	Cloud Computing					
	1905125	Notwork Programming					
2	1805125	R Programming	3	_	_	3	
2	18CS120	Python Programming	5	-	-	5	
	1805127	Software Testing Methodologies					
	1000101	solution results remotionses					
3	18CS132	Software Project Management	3	-	-	3	
4	18CS133	Data Modelling	3	1	-	3	
5	18CS134	Machine Learning	3	1	-	3	
6	18CS143	Machine Learning Lab	-	-	2	1	
7	18CS144	Data Modelling Lab	-	-	2	1	
8	18CS145	Professional Elective IV Lab	-	-	2	1	
8	18PR102	Capstone Phase I	-	-	6	3	
Total						21	

IV Year II Semester

S No	Course Code Course		e			
5. NO.		Course	L	Т	P/ D	С
1	180E	Open Elective IV	3	-	-	3
2	18CS135 18CS136 18CS137 18CS138	Professional Elective V Advanced Algorithms Advanced Discrete Mathematical Structures Blockchain Technologies Image Processing	3	-	-	3
3	18CS139 18CS140 18CS141 18CS141	Professional Elective VI Advanced Computer Architecture Human Computer Interaction Ad-hoc and Senor Networks Cyber Forensics Enterprise Resource Planning	3	-	-	3
4	18PR103	Capstone Phase II/Practice School	-	-	16	8
Total						17

PROFESSIONAL ELECTIVES TRACKS

Artificial Intelligence Track

- 1. Artificial Intelligence
- 2. Neural Networks and Deep Learning
- 3. Network Programming

Big Data Track

- 1. Distributed Systems
- 2. Data Mining
- 3. Big Data Analytics

Internet of Things Track

- 1. Foundations of IoT
- 2. Distributed IoT Systems
- 3. Security in IoT

OTHER PROFESSIONAL ELECTIVES

- 1. Principles of Programming Languages
- 2. Scripting Languages
- 3. R Programming
- 4. Python Programming
- 5. Natural Language Processing
- 6. Cloud Computing
- 7. Software Testing Methodologies
- 8. Advanced Algorithms
- 9. Advanced Discrete Mathematical Structures
- 10. Blockchain Technologies
- 11. Image Processing
- 12. Advanced Computer Architecture
- 13. Human Computer Interaction
- 14. Ad-hoc and Senor Networks
- 15. Cyber Forensics

OPEN ELECTIVES

Design for Social Impact Track (EPICS)

- 1. 18OE101 Design for Social Impact I
- 2. 18OE102 Design for Social Impact II
- 3. 18OE103 Design for Social Impact III

Entrepreneurship Track

- 1. 18OE104 Essentials of Entrepreneurship
- 2. 18OE105 Business Modelling and Validation
- 3. 18OE106 Startup Launch

Cognitive Track

- 1. 18OE107 Foundations to Cognitive Science
- 2. 18OE108 Design Cognition
- 3. 18OE109 Cognitive Management

Visual Communication Track

- 1. 18OE110 Visual Communication and Computer Art
- 2. 18OE111 Image Manipulation in Adobe Photoshop
- 3. 18OE112 Advanced Visual Organization and After Effects
- 4. 18OE113 Visual Communication in Text and Images

Other Open Electives

- 1. 18OE114 Philosophy
- 2. 18OE115 Psychology
- 3. 18OE116 Sociology
- 4. 18OE117 Engineering Ethics
- 5. 18OE118 Environmental Sciences
- 6. 180E119 MORSE
- 7. 18OE120 Operations Research
- 8. 18OE121 Mathematical Foundation in Computer Science II
- 9. 18OE122 Marketing for Engineers
- 10. 18OE123 Business Analytics
- 11. 18OE124 Disaster Management
- 12. 18OE125 Pollution and Control Engineering
- 13. 18OE126 Smart Cities
- 14. 18OE127 Introduction to Control Systems
- 15. 18OE128 Fundamentals of Electrical Machines
- 16. 18OE129 Principles of Electrical and Electronics Engineering
- 17. 18OE130 Basics of Thermodynamics
- 18. 180E131 Hybrid Electric Vehicles
- 19. 18OE132 Renewable Energy Resources
- 20. 18OE133 Advanced Topic in Algorithms
- 21. 18OE134 Cyber Laws
- 22. 18OE136 Scripting Languages
- 23. 18OE137 Block Chain Technology
- 24. 18OE138 Intellectual Property Rights
- 25. 18OE139 Project Management
- 26. 18OE140 Data Science
- 27. 18OE141 Cognitive Neuro Science
- 28. 18OE142 Technical Writing